

What is claimed is:

1. A method of creating particulates coated with acid-releasing degradable material on-the-fly comprising the step of:

combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution; and,

coating the coating solution onto a particulate on-the-fly to create coated particulates.

2. The method of claim 1 wherein the particulates are coated with from about 0.1% to about 20% low molecular weight acid-releasing degradable material by weight of the particulates.

3. The method of claim 1 wherein the low molecular weight acid-releasing degradable material comprises a material that is substantially water insoluble and that degrades over time in an aqueous environment.

4. The method of claim 1 wherein the acid-releasing degradable material comprises a polyester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); a substantially water insoluble anhydrides; a poly(anhydride); a poly(amino acids); a mixture of one of the above-listed compounds; or a copolymer of two or more of the above-listed compounds.

5. The method of claim 1 wherein the solvent comprises acetone, propylene carbonate, di(propylene glycol) methyl ether, di(propylene glycol) propyl ether, di(propylene glycol) butyl ether, di(propylene glycol) methyl ether acetate, isopropyl alcohol, chloroform, dichloromethane, trichloromethane, 1,2-dichlorobenzene, tetrahydrofuran, benzene, acetonitrile, dioxane, dimethylformamide, toluene, ethyl acetate, isoamyl alcohol, N-methylpyrrolidone, xylenes, dichloroacetic acid, m-cresol, hexafluoroisopropanol, diphenyl ether, acetonitrile, methanol, ethyl benzene, naphthalene, naphtha, or combinations thereof.

6. The method of claim 1 wherein the plasticizer comprises polyethylene glycol; polyethylene oxide; oligomeric lactic acid; citrate esters; glucose monoesters; partially fatty acid esters; PEG monolaurate; triacetin; poly(ϵ -caprolactone); poly(hydroxybutyrate); glycerin-1-benzoate-2,3-dilaurate; glycerin-2-benzoate-1,3-dilaurate; starch; bis(butyl diethylene glycol)adipate; ethylphthalylethyl glycolate; glycerine diacetate monocaprylate; diacetyl monoacyl glycerol; polypropylene glycol; poly(propylene glycol)dibenzoate, dipropylene glycol

dibenzoate; glycerol; ethyl phthalyl ethyl glycolate; poly(ethylene adipate)disterate; di-iso-butyl adipate; or combinations thereof.

7. A method of degrading filter cake in a subterranean formation comprising the steps of:

combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution;

coating the coating solution onto a particulate on-the-fly to create coated particulates;

placing the coated particulates into a subterranean formation so that they form a pack substantially adjacent to a filter cake;

allowing the low molecular weight acid-releasing degradable material to produce acid; and

allowing the acid to contact and degrade a portion of the filter cake.

8. The method of claim 7 wherein the filter cake comprises a filter cake on the walls of a well bore or a filter cake on the walls of a fracture.

9. The method of claim 7 wherein the particulates are coated with from about 0.1% to about 20% low molecular weight acid-releasing degradable material by weight of the particulates.

10. The method of claim 7 wherein the low molecular weight acid-releasing degradable material comprises a material that is substantially water insoluble and that degrades over time in an aqueous environment.

11. The method of claim 7 wherein the low molecular weight acid-releasing degradable material comprises a polyester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); a substantially water insoluble anhydrides; a poly(anhydride); a poly(amino acids); a mixture of one of the above-listed compounds; or a copolymer of two or more of the above-listed compounds.

12. The method of claim 7 wherein the solvent comprises acetone, propylene carbonate, di(propylene glycol) methyl ether, di(propylene glycol) propyl ether, di(propylene glycol) butyl ether, di(propylene glycol) methyl ether acetate, isopropyl alcohol, chloroform, dichloromethane, trichloromethane, 1,2-dichlorobenzene, tetrahydrofuran, benzene, acetonitrile, dioxane, dimethylformamide, toluene, ethyl acetate, isoamyl alcohol, N-methylpyrrolidone,

xylenes, dichloroacetic acid, m-cresol, hexafluoroisopropanol, diphenyl ether, acetonitrile, methanol, ethyl benzene, naphthalene, naphtha, or combinations thereof.

13. The method of claim 7 wherein the plasticizer comprises polyethylene glycol; polyethylene oxide; oligomeric lactic acid; citrate esters; glucose monoesters; partially fatty acid esters; PEG monolaurate; triacetin; poly(ϵ -caprolactone); poly(hydroxybutyrate); glycerin-1-benzoate-2,3-dilaurate; glycerin-2-benzoate-1,3-dilaurate; starch; bis(butyl diethylene glycol)adipate; ethylphthalylethyl glycolate; glycerine diacetate monocaprylate; diacetyl monoacyl glycerol; polypropylene glycol; poly(propylene glycol)dibenzoate, dipropylene glycol dibenzoate; glycerol; ethyl phthalyl ethyl glycolate; poly(ethylene adipate)disterate; di-iso-butyl adipate; or combinations thereof.

14. A method of using a portion of a gravel pack to degrade a portion of a filter cake comprising the steps of

combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution;

coating the coating solution onto gravel on-the-fly to create coated gravel;

introducing the coated gravel to a well bore having a filter cake so that the coated gravel forms a gravel pack substantially adjacent to the filter cake;

allowing the acid-releasing degradable material to produce acid; and,

allowing the acid to contact and degrade a portion of the filter cake.

15. The method of claim 14 wherein the gravel pack compositions comprises from about 0.1% to about 20% acid-releasing degradable material by weight of the gravel particles.

16. The method of claim 14 wherein the acid-releasing degradable material comprises a material that is substantially water insoluble such that it degrades over time.

17. The method of claim 14 wherein the acid-releasing degradable material comprises a polyester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); a substantially water insoluble anhydrides; a poly(anhydride); a poly(amino acids); a mixture of one of the above-listed compounds; or a copolymer of two or more of the above-listed compounds.

18. The method of claim 14 wherein the solvent comprises acetone, propylene carbonate, di(propylene glycol) methyl ether, di(propylene glycol) propyl ether, di(propylene glycol) butyl ether, di(propylene glycol) methyl ether acetate, isopropyl alcohol, chloroform, dichloromethane, trichloromethane, 1,2-dichlorobenzene, tetrahydrofuran, benzene, acetonitrile, dioxane, dimethylformamide, toluene, ethyl acetate, isoamyl alcohol, N-methylpyrrolidone, xylenes, dichloroacetic acid, m-cresol, hexafluoroisopropanol, diphenyl ether, acetonitrile, methanol, ethyl benzene, naphthalene, naphtha, or combinations thereof.

19. The method of claim 14 wherein the plasticizer comprises polyethylene glycol; polyethylene oxide; oligomeric lactic acid; citrate esters; glucose monoesters; partially fatty acid esters; PEG monolaurate; triacetin; poly(ϵ -caprolactone); poly(hydroxybutyrate); glycerin-1-benzoate-2,3-dilaurate; glycerin-2-benzoate-1,3-dilaurate; starch; bis(butyl diethylene glycol)adipate; ethylphthalylethyl glycolate; glycerine diacetate monocaprylate; diacetyl monoacyl glycerol; polypropylene glycol; poly(propylene glycol)dibenzoate, dipropylene glycol

dibenzoate; glycerol; ethyl phthalyl ethyl glycolate; poly(ethylene adipate)disterate; di-iso-butyl adipate; or combinations thereof.

20. A method of using a portion of a proppant pack to degrade filter cake comprising the steps of:

combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution;

coating the coating solution onto proppant on-the-fly to create coated proppant;

introducing the coated proppant to a fracture so that a proppant pack forms against walls of the fracture wherein a wall of the fracture has a filter cake thereon;

allowing the acid-releasing degradable material to produce acid; and,

allowing the acid to contact and degrade a portion of the filter cake.

21. The method of claim 20 wherein the proppant pack composition comprises from about 0.1% to about 20% acid-releasing degradable material by weight of the gravel particles.

22. The method of claim 20 wherein the acid-releasing degradable material comprises a material that is substantially water insoluble such that it degrades over time.

23. The method of claim 20 wherein the acid-releasing degradable material comprises a polyester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); a substantially water insoluble anhydrides; a poly(anhydride); a poly(amino acids); a mixture of one of the above-listed compounds; or a copolymer of two or more of the above-listed compounds.

24. The method of claim 20 wherein the solvent comprises acetone, propylene carbonate, di(propylene glycol) methyl ether, di(propylene glycol) propyl ether, di(propylene glycol) butyl ether, di(propylene glycol) methyl ether acetate, isopropyl alcohol, chloroform, dichloromethane, trichloromethane, 1,2-dichlorobenzene, tetrahydrofuran, benzene, acetonitrile, dioxane, dimethylformamide, toluene, ethyl acetate, isoamyl alcohol, N-methylpyrrolidone, xylenes, dichloroacetic acid, m-cresol, hexafluoroisopropanol, diphenyl ether, acetonitrile, methanol, ethyl benzene, naphthalene, naphtha, or combinations thereof.

25. The method of claim 20 wherein the plasticizer comprises polyethylene glycol; polyethylene oxide; oligomeric lactic acid; citrate esters; glucose monoesters; partially fatty acid esters; PEG monolaurate; triacetin; poly(ϵ -caprolactone); poly(hydroxybutyrate); glycerin-1-benzoate-2,3-dilaurate; glycerin-2-benzoate-1,3-dilaurate; starch; bis(butyl diethylene glycol)adipate; ethylphthalylethyl glycolate; glycerine diacetate monocaprylate; diacetyl monoacyl glycerol; polypropylene glycol; poly(propylene glycol)dibenzoate, dipropylene glycol

dibenzoate; glycerol; ethyl phthalyl ethyl glycolate; poly(ethylene adipate)disterate; di-iso-butyl adipate; or combinations thereof,

26. A gravel pack comprising gravel particles coated on-the-fly with an acid-releasing degradable material.

27. The gravel pack of claim 26 wherein the gravel pack compositions comprises from about 0.1% to about 20% acid-releasing degradable material by weight of the gravel particles.

28. The gravel pack of claim 26 wherein the acid-releasing degradable material comprises a material that is substantially water insoluble such that it degrades over time.

29. The gravel pack of claim 26 wherein the acid-releasing degradable material comprises a polyester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); a substantially water insoluble anhydrides; a poly(anhydride); a poly(amino acids); a mixture of one of the above-listed compounds; or a copolymer of two or more of the above-listed compounds.

30. The gravel pack of claim 26 wherein the acid-releasing degradable material further comprises a solvent.

31. The gravel pack of claim 30 wherein the solvent comprises acetone, propylene carbonate, di(propylene glycol) methyl ether, di(propylene glycol) propyl ether, di(propylene glycol) butyl ether, di(propylene glycol) methyl ether acetate, isopropyl alcohol, chloroform, dichloromethane, trichloromethane, 1,2-dichlorobenzene, tetrahydrofuran, benzene, acetonitrile, dioxane, dimethylformamide, toluene, ethyl acetate, isoamyl alcohol, N-methylpyrrolidone, xylenes, dichloroacetic acid, m-cresol, hexafluoroisopropanol, diphenyl ether, acetonitrile, methanol, ethyl benzene, naphthalene, naphtha, or combinations thereof.

32. The gravel pack of claim 26 wherein the acid-releasing degradable material further comprises a plasticizer.

33. The gravel pack of claim 32 wherein the plasticizer comprises polyethylene glycol; polyethylene oxide; oligomeric lactic acid; citrate esters; glucose monoesters; partially fatty acid esters; PEG monolaurate; triacetin; poly(ϵ -caprolactone); poly(hydroxybutyrate); glycerin-1-benzoate-2,3-dilaurate; glycerin-2-benzoate-1,3-dilaurate; starch; bis(butyl diethylene glycol)adipate; ethylphthalylethyl glycolate; glycerine diacetate monocaprylate; diacetyl monoacyl glycerol; polypropylene glycol; poly(propylene glycol)dibenzoate, dipropylene glycol dibenzoate; glycerol; ethyl phthalyl ethyl glycolate; poly(ethylene adipate)disterate; di-iso-butyl adipate; or combinations thereof.

34. A proppant pack comprising proppant particles coated on-the-fly with an acid-releasing degradable material.

35. The proppant pack of claim 34 wherein the proppant pack compositions comprises from about 0.1% to about 20% acid-releasing degradable material by weight of the gravel particles.

36. The proppant pack of claim 34 wherein the acid-releasing degradable material comprises a material that is substantially water insoluble such that it degrades over time.

37. The proppant pack of claim 34 wherein the acid-releasing degradable material comprises a polyester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); a substantially water insoluble anhydrides; a poly(anhydride); a poly(amino acids); a mixture of one of the above-listed compounds; or a copolymer of two or more of the above-listed compounds.

38. The proppant pack of claim 34 wherein the acid-releasing degradable material further comprises a solvent.

39. The proppant pack of claim 38 wherein the solvent comprises acetone, propylene carbonate, di(propylene glycol) methyl ether, di(propylene glycol) propyl ether, di(propylene glycol) butyl ether, di(propylene glycol) methyl ether acetate, isopropyl alcohol, chloroform, dichloromethane, trichloromethane, 1,2-dichlorobenzene, tetrahydrofuran, benzene, acetonitrile, dioxane, dimethylformamide, toluene, ethyl acetate, isoamyl alcohol, N-methylpyrrolidone, xylenes, dichloroacetic acid, m-cresol, hexafluoroisopropanol, diphenyl ether, acetonitrile, methanol, ethyl benzene, naphthalene, naphtha, or combinations thereof.

40. The proppant pack of claim 34 wherein the acid-releasing degradable material further comprises a plasticizer.

41. The proppant pack of claim 40 wherein the plasticizer comprises polyethylene glycol; polyethylene oxide; oligomeric lactic acid; citrate esters; glucose monoesters; partially fatty acid esters; PEG monolaurate; triacetin; poly(ϵ -caprolactone); poly(hydroxybutyrate); glycerin-1-benzoate-2,3-dilaurate; glycerin-2-benzoate-1,3-dilaurate; starch; bis(butyl diethylene glycol)adipate; ethylphthalylethyl glycolate; glycerine diacetate monocaprylate; diacetyl monoacyl glycerol; polypropylene glycol; poly(propylene glycol)dibenzoate, dipropylene glycol dibenzoate; glycerol; ethyl phthalyl ethyl glycolate; poly(ethylene adipate)disterate; di-iso-butyl adipate; or combinations thereof.